Washington Park

ARBORETUM BULLETIN

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Concerning This Issue . . .

Spring means the sprouting of flowers and "For Sale" signs. How does *your* garden sell? Find out in Valerie Easton's survey of what appraisers, Realtors, and buyers look for in a home landscape.

What to look for in the Arboretum is suggested to newcomers and long-time members by program coordinator Lynda Ransley. Then, read Timothy Hohn's description of the Arboretum in winter and his article on *Nothofagus antarctica* 'Puget Pillar', so you will have other destinations within the Arboretum. However, if you find purple loosestrife, growing in the Foster Island marsh area and other areas throughout Washington State, you'll need to know what to do. Kristina G.H. Lau and Estella B. Leopold offer the natural history and suggest action to take on this "purple horror."

Daniel Hinkley either extends the possibilities for winter color or gets a jump on spring in his article. He describes the plant potential for the forgotten color months of mid-winter—February and March.

"Can't see the forest for the herbs?" In the last issue of the *Bulletin* we investigated a drought-tolerant herb garden. This time, Mary Booth leads us around the woody plants forming the backbone of the University of Washington's Medicinal Herb Garden.

"Key plants" can be identified and monitored in your garden to minimize use of chemicals. Van M. Bobbitt takes last issue's article on integrated pest management one step further in this season's Northwest Hort Review. Valerie Easton reviews books on natural gardens, and two important new books are reviewed by James R. Clark and Brian Mulligan.

Holding on to the old *Bulletins*, meaning to take some of those wonderful walks? "Eight Big Trees at the University of Washington" leads you into this issue's destination garden (volume 52, number 2). Also on the University campus is a tour of trees planted by Edmond Meany earlier in the century (volume 53, number 1). Or heed the advice of Lynda Ransley's article, and find your own pathway in the Washington Park Arboretum.

Jan Silver, Editor
The Washington Park Arboretum Bulletin

Cover: Stachyurus praecox *by Tamara Lee Knight, created for Daniel Hinkley's article (p. 14) in this issue of the* Washington Park Arboretum Bulletin. *The framed original is for sale in the Arboretum's Gift Shop, Graham Visitors Center. For commissions, call Tamara at (206) 481-5783. The careers of other participants in the Northwest's renaissance of horticultural art will be highlighted in future issues.*

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CONTENTS

Background photo: *Cornus nuttallii*, by E.F. Marten, courtesy of Center for Urban Horticulture. "Key plant" pest control information for dogwoods and other species, page 22.

The Washington Park Arboretum Bulletin is published quarterly, as a bonus of membership in The Arboretum Foundation. The Arboretum Foundation is a non-profit organization that was chartered to further the development of the Washington Park Arboretum, its projects and programs, by means of volunteer service and fund-raising projects. The Washington Park Arboretum is administered through cooperative efforts between the University of Washington, the Center for Urban Horticulture, and the City of Seattle Department of Parks and Recreation. The programs and plant collections are a responsibility of the Center for Urban Horticulture.

For membership information, write to The Arboretum Foundation, University of Washington (XD-10), Seattle, WA 98195 or call (206) 325-4510. Articles on gardening and horticulturally related subjects are welcome. Please call for guidelines. For permission to reprint any part of the *Arboretum Bulletin*, please contact the Arboretum Foundation for written permission.

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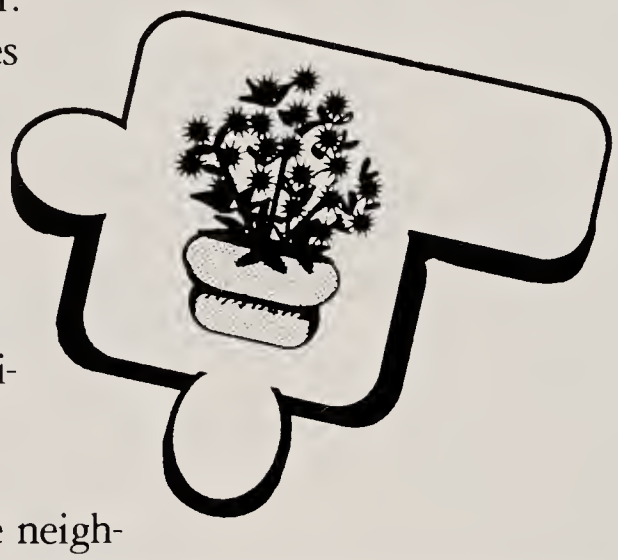
How Does Your Garden Sell?

by Valerie Easton

"Plants are like wallpaper—just personal preference," explains Paula Ranson, Seattle residential real estate appraiser with The Appraisal Group, in an attempt to explain how little notice appraisers take of individual plants. Ranson doesn't care if that beautifully sited specimen tree is a Douglas-fir or a winter-flowering cherry whose blooms cheer a dark February day, or whether a hedge is of carefully nurtured *Escallonia* or the most common English laurel.

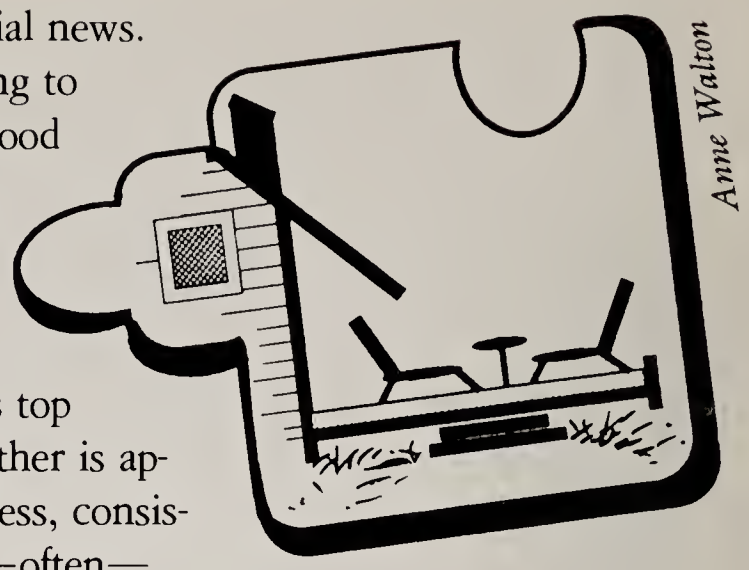
The Value of Landscaping

In valuing property, Paula Ranson looks first to see if a tree or shrub is doing what it is supposed to do: Does it provide shade or privacy, help prevent run-off, or retain a slope? A landscape can detract from a property's value if an appraiser sees flaws that need fixing. But the avid gardener might ask about the value of expensive special landscape features like ponds, walkways, or a long flowering perennial border.



Ranson agrees that a landscape is a major investment, but most importantly in terms of its utility to the site and in how it conforms to the neighborhood. She once appraised a house in an upscale Seattle neighborhood whose owners had spent $100,000 on their landscape and were hoping to see some of that reflected in their property's appraised value. To her eye, all the owner had done was bring the landscape up to the level of the surrounding properties. She noted that in California where trees are less plentiful, dollar amounts for certain species are related to market value. However, in the Pacific Northwest, not much attention is paid unless the landscaping does not conform to surrounding properties in quality and style.

For the enthusiastic gardener who knows both the cost of plants and the time it takes to develop a mature landscape, landscape value can be depressing financial news. Conforming to neighborhood gardens is not usually one of a gardener's top goals. Neither is appropriateness, consistency, or—often—low maintenance.



Anne Walton

However, Bob Rothstein, another Seattle real estate appraiser, looks for low maintenance when valuing landscapes. "The three major ways to enhance the value of a property are through improvements to the kitchen, bath, and landscape," says Rothstein. In the landscape, due to the demographics of the market and the direction of urban and suburban living, he feels that lower maintenance is the most valuable attribute. When appraising a residential property, Rothstein says he also notices "quality of design, hardiness of plantings, and decks and patios appropriate to the house."

It would be so convenient for the gardener if there were a set formula, a rule of thumb for landscape components like there is for house improvements. Perhaps gardeners could expect to get their money back out of hedges and ponds, as they could in adding a bathroom to their home, or know they are increasing the value of their house by a certain percentage when they install a patio, as they would with kitchen improvements.

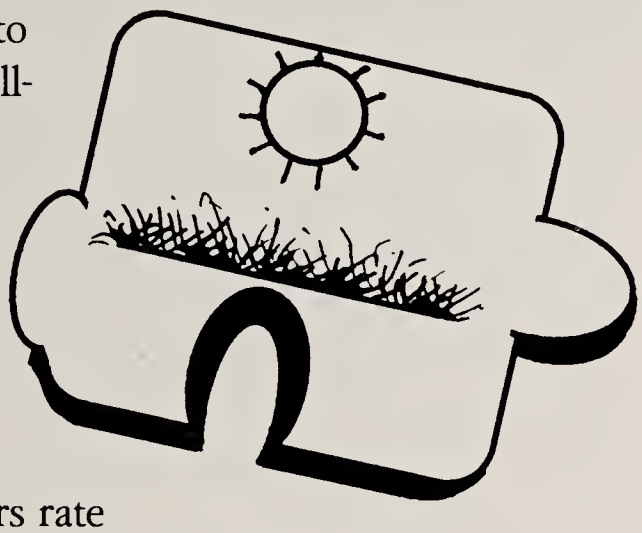
However, according to Bob Rothstein, there is no such set formula for dollar value of landscape features. In fact, on an appraisal report there is no line item with specific dollar value assignments for landscaping. In a national survey of appraisers, it was reported that an appraiser would have to make special considerations and notes on the standardized survey form if value is placed on landscaping (Weyerhaeuser 1986: 18).

Insured Value Isn't Appraised Value

On the other hand, there are well-accepted ways of determining the value of individual plants for instances of loss, negligence, or liability for tax or insurance purposes; these figures can be high, with appraisals of mature shade trees usually in four or five figures (*American Horticulturist* 1989). More information on the whys and hows of valuing individual plants is available in the booklet by the International Society of Arboriculture, *The Valuation of*

Landscape Trees, Shrubs, and Other Plants (Neely 1988). Whereas these industry-set values on individual plants obviously are not accepted market value, it is curious that they do not at least translate into a higher perceived value for landscaping as a whole in real-estate transactions.

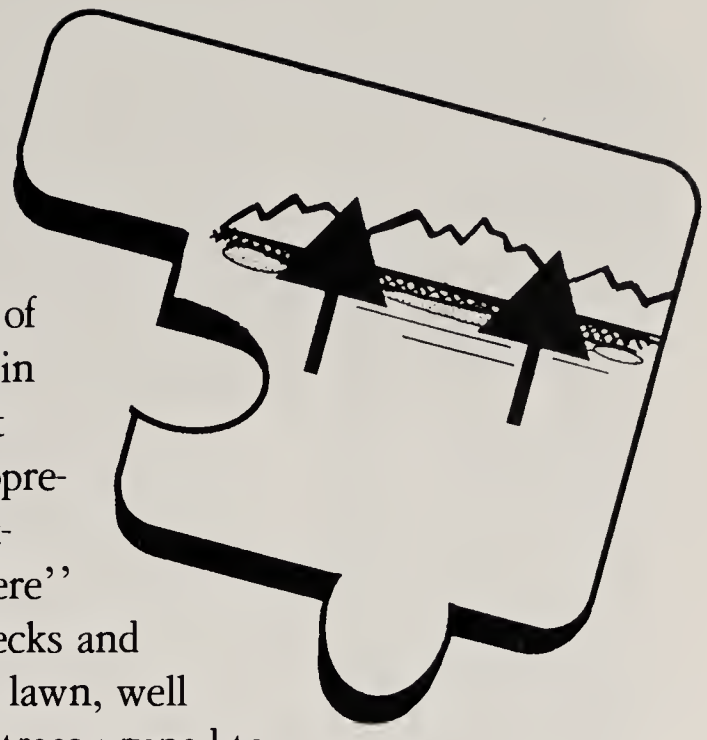
Several studies have been undertaken to determine the value of landscaping to residential properties. In one such study, it was determined that tree cover on a residential property in Manchester, Connecticut, added $2,686 or 6% of the total price to the property value of the homes observed (Morales 1980). In a suburb of Rochester, New York, trees added $9,500 (18%) to the average sale price of a residence (Dwyer 1984). A Gallup landscaping survey determined that home buyers on the average felt that landscaping added 14.8% to the value or selling price of their home (Weyerhaeuser 1986: 13). However, residential real estate appraisers rate the value of landscaping at only 7.28% of the total property value (Weyerhaeuser 1986: 20).



What do all of these sometimes conflicting numbers and opinions mean to the gardener who may want to sell his or her home? Appraisers, home owners, and Realtors all seem to agree that good landscaping can sell a house faster, if not at a higher price, which is no small consideration in a buyer's market. If Seattle's market remains as competitive as in the latter half of 1990 and early 1991, landscaping could be the edge that causes a buyer to choose one house over another.

What Buyers Want

But what is it about the landscaping that influences potential home buyers? Not those marvelous herbaceous borders, rock gardens, or unusual ornamental grasses so dear to the gardener's heart. According to Kitty Hughes of Seattle's Madison House Realty, a neat, well-groomed, low-maintenance garden is what home buyers are looking for—"curb appeal," as it is known by Realtors. "Curb appeal" means that a garden gives a home presence, "a warm feeling," a good first impression. "People understand rhododendrons," says Hughes, and they also like flowers and color in the garden, as well as plenty of green. People in the Northwest particularly appreciate the "outdoor atmosphere" provided by decks and patios. A nice lawn, well trimmed, and trees pruned to see the view and let plenty of light into the house all are favored by home buyers. Hughes says that even if a garden is large and somewhat more involved than just rhododendrons and lawn, if it is very well maintained, buyers perceive it as not being too overwhelming.



A study in West Germany showed that there is a 40-fold jump in maintenance time from the least labor-intensive to the most labor-intensive vegetation type (Kiermeier 1989). This maintenance factor scares a buyer who sees a poorly kept garden or overgrown trees and shrubs. It is not the individual garden components or specific plants, but the overall effect, neatness, the "curb appeal" that catches a buyer's interest. Maria Rippee, a Windermere Realtor and herself an avid gardener, believes that gardens are not a priority with the majority of buyers, and estimates that only 5% of the time do her clients have varying degrees of gardening interests. She agrees with Kitty Hughes that low maintenance is the major criteria for most buyers. However, Ms. Hughes also comments that a garden *can* sell a house. She has seen people fall in love with the "aura and presence" of the yard and because of the garden it becomes the "house of their dreams."

Preparing the Garden for Sale

So, what can the gardener do to best take advantage of the garden when putting a house up for sale?

Forget giving plant lists to your Realtor, or waiting until your blue poppies are in bloom before you list your house. Rather, make sure that rockeries, hedges, trees, and other landscape features are effectively doing the jobs they are meant to do: protecting privacy, retaining slopes, aiding good drainage. Mow, trim, sweep, weed, and prune. Even if you enjoy a natural looking garden, messiness means high upkeep to a buyer. Remember curb appeal—the first impression given by your garden—and add flowers, planters, and shrubs accordingly. Don't over-improve in the hope of boosting sales value, and keep the quality and style of neighboring gardens in mind, as the appraiser surely will do.

Perhaps most importantly, don't expect to have your time and dollar investment in your garden recovered at the time of sale. There are all kinds of good reasons to garden, although the market value of landscaping in real estate transactions doesn't seem to be one of them. Maria Rippee of Windermere remarked that the landscaping factor in property sales is hard to quantify, being so subjective and dependent on individual aesthetics. Therefore, gardeners may as well follow their own personal aesthetics—and it couldn't hurt to hang a little wallpaper, either.

Valerie Easton is a librarian at the Elisabeth C. Miller Library, University of Washington Center for Urban Horticulture, and the book review editor for the *Washington Park Arboretum Bulletin*. Her house was for sale as she wrote this article; it sold before publication.

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Lynda J. Ransley

A group of elementary school children in the Saplings program listens to volunteers. The Washington Park Arboretum's Graham Visitors Center is in the background. (Below) The Washington Park Arboretum is administered by the Center for Urban Horticulture (CUH). CUH, a few miles north, houses the library, hortorium, lectures, and classes.

Discovering the Washington Park Arboretum

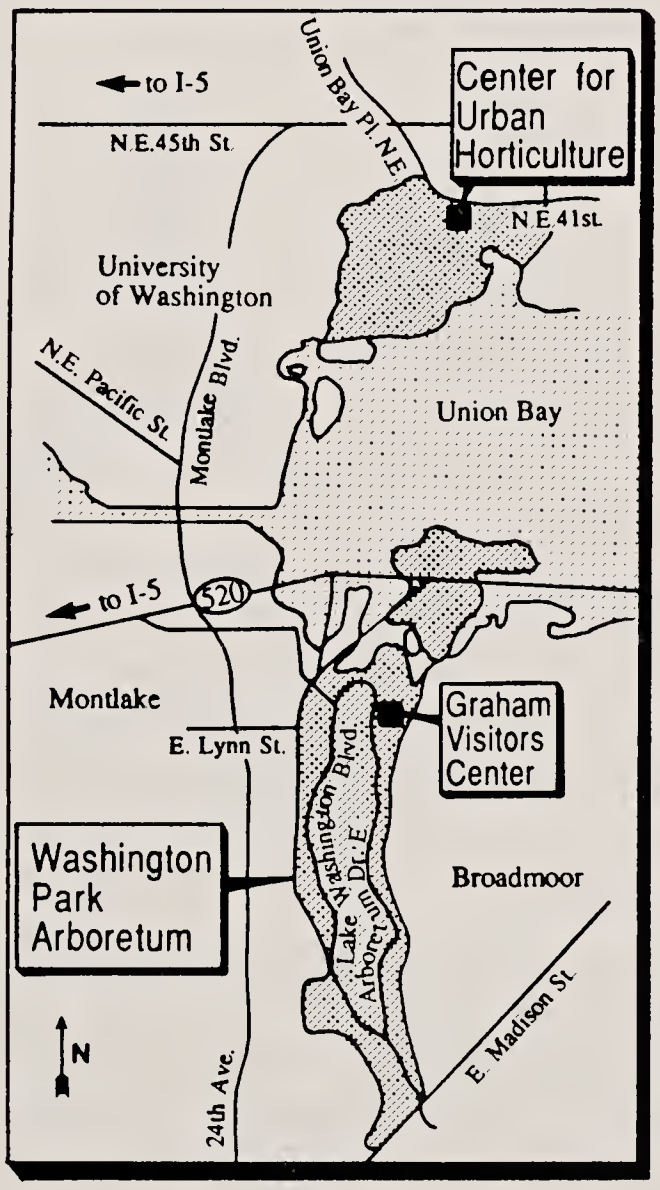
by Lynda J. Ransley

Whether you are a visitor to the Arboretum or a long-time Foundation member, Arboretum exploration awaits you.

If you posed the question, "How do you use the Washington Park Arboretum?" to a sampling of visitors, you likely would get very different responses, from "It's the best fishing spot around Union Bay" or "My cousin was married there last summer" to "Our plant identification class has its laboratories there." Depending on whom you ask, the Arboretum may signify a taxonomic grouping of plants, an urban green space, a place to go to talk with "plant" people—or any number of other things.

On the back of this (and each) *Bulletin* is a definition of *arboretum* as "a living museum of woody plants for education, conservation, research, and display." Although this may be the true institutional definition, its practical interpretation will differ based upon each visitor's interests, past experiences, and immediate needs.

Perhaps the best way to illustrate the opportunities available for using the Arboretum is from the perspective of a visitor or new member. Let us assume that you are new to the Seattle area and are in-



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Timothy Hohn

A typical Arboretum tag, hanging from Magnolia x soulangiana *'Speciosa'. The first digits indicate the order in which the magnolia was acquired in 1952. The second two digits indicate year of acquisition.*

terested in home gardening. You recently joined The Arboretum Foundation wishing to support the Arboretum, share your interest in plants, and expand your knowledge of horticulture. Logically, your first questions would be about what you can learn from the Arboretum and how you can begin to understand it.

The Layout of the Arboretum

The Arboretum's 200 acres provide a great diversity of plants, topography, and habitat. The collections encompass over 5,500 different types of plants displayed to illustrate taxonomic relationships, cultural requirements, biogeographic similarities, and landscape characteristics.

Before exploring the collections, it is helpful to understand the layout of the Arboretum. Displays currently are arranged by taxonomic relationship (e.g., oak family, mountain ashes, magnolias, etc.), or in landscape areas (Woodland Garden, Rock Garden, Winter Garden). Individual plants in the collections are inventoried by a unique accession number that indicates year acquired and the order in which it was received. The information is on each green-and-white or metal accession label hanging from Arboretum specimens. An example is *Magnolia* x *soulangiana* 'Speciosa' in the photo: 57-52. The first digits of the accession label indicate the order in which it was acquired during a specific year; the second two digits are that year of acquisition. Specimen plants also may have large display labels that include both common and scientific names, nativity, or other appropriate information.

Preferably, start your Arboretum exploration at the Graham Visitors Center, open daily from 10 a.m. to 4 p.m., weekdays; 12 p.m.to 4 p.m., weekends. The Visitors Center is the hub of Arboretum activity and a source of information and guidance. Volunteers are on hand to offer you the information and resources you need to make the most of your visit. Also, here you will find staff offices, The Arboretum Foundation office, the gift shop, rest rooms, and meeting spaces.

Typically, you will head to the lobby information desk and talk to the volunteer on duty. The volunteers have many resources available to assist you, and are wonderful sources of Arboretum information and history, visit-planning suggestions, plant knowledge, referrals to other local resources, and personal insight. At the information desk, pick up some of the many handouts and brochures available to help introduce you to the Arboretum.

You May Ask for These Brochures:

- Arboretum trail map
- Bird checklist
- Trail brochures (Waterfront trail, Self-guided Walk, Native plant walk, Maple trail, Foster Island ecology walk, etc.)
- Maps of special areas (Signature Bed schematic; Joseph A. Witt Winter Garden)
- Seasonal interest brochures (including annual highlights, summer strolls, colors of fall)
- Arboretum Foundation literature (membership forms, newsletter, how to join the plant study groups or units)
- Information on other nearby gardens of interest, such as the Japanese Garden, Volunteer Park, Bloedel Reserve, Rhododendron Species Foundation, Lakewold, etc.

The information volunteers have a wealth of references on hand to help answer your questions or direct you to places where you may find answers: horticultural reference books, lists of local plant societies, schedules for upcoming regional horticultural events, fact sheets on other area gardens, tele-

Glossary

Biogeography studies the geographical distribution of plants.

Horticulture is the science and art of growing fruits, vegetables, flowers, or ornamental plants.

Taxonomy is the orderly classification of plants and animals into ranks (e.g., genus, species, variety, etc.)

phone numbers of resource agencies, and lists of books available in the library at the Center for Urban Horticulture (CUH), which manages the Arboretum. There is also an excellent gift shop in the Visitors Center which stocks a diverse selection of horticultural books and gifts.

Throughout the year, the King County Master Gardeners are stationed at the Visitors Center (from April through October, Saturday and Sunday; October through April, Sunday). They can answer your specific questions about gardening techniques, plant identification, and pest and disease diagnosis. During the week, you may reach them by telephone on their information hotline, (206) 296-3440.

Join a Tour or Explore on Your Own

Would you like a more formal introduction to the plant collections? Join one of the Arboretum's volunteer guides on a "Sunday at One" tour which leaves from the Visitors Center at 1:00 P.M. These tours vary each week, depending on seasonal interest and the guide's preference, so you are likely to have a different experience each time.

Once you become more familiar with the collections, join the Explorer's Walk on the fourth Wednesday of each month, designed for serious plant enthusiasts who want more in-depth, plant-specific information. Your group also can schedule individual guided tours by calling the Arboretum.

If you prefer to explore on your own, obtain the useful 1977 catalog, *Woody Plants in the University of Washington Arboretum, Washington Park*. This valuable reference, on sale at the gift shop, was compiled by Director Emeritus Brian O. Mulligan and it is the quintessential resource for serious plantspeople using the Arboretum. It lists, by scientific name, the plant accessions along with their date of planting and location. They are keyed to the fold-out map in back of the book.

Further Information about Plants

Plant records are maintained by the curator's office at the Visitors Center. Much of this information is now kept on a computerized data base. You can arrange to find out more about individual plants or entire collections by making an appointment with a staff member. For identification and documentation purposes, the Hyde Hortorium, located at the Center for Urban Horticulture, maintains herbarium voucher specimens of the Arboretum's collections.

More Questions?

Now, after visiting the Arboretum several times, exploring the plant collections, talking to the volunteers and staff, accompanying guides on tours, and

studying all of the resources available on the plant collections, your interest has merely been piqued and you still may have many questions. Where can you go to find out more?

The first place to consult is the Arboretum's library—the Elisabeth C. Miller Library, which is located at the University of Washington's Center for Urban Horticulture. The best facility of its kind in the Pacific Northwest, it is well equipped to serve a broad range of horticultural interests. The library's collections include over 6,000 books, and 300 journal and newsletter subscriptions, providing resources on horticulture and related topics for everyone from the novice gardener to the serious researcher or professional. Nursery source references provide information on hard-to-find plants both regionally and internationally. Geographic files contain information on gardens and arboreta throughout the world. The library staff will help locate information, prepare reference lists on special topics, and refer you to local, regional, and national organizations that represent your interests.

Learning opportunities also exist with the public classes, lectures, and workshops offered by the Arboretum's continuing education programs and special events. Twenty to thirty programs of interest are offered each quarter, ranging from tours of specialty nurseries and classes in pruning, to lectures on unusual plants. Sign up on the mailing list for *CUH Presents* to receive the free quarterly newsletter and class schedule, or call (206) 543-8616. For professional horticulturists, the ProHort Program offers classes and a quarterly newsletter that focus on topics of interest to those in the landscape trade.

The Arboretum Foundation also offers educational programs to its members. Special events, lectures, and trips are listed in its newsletter. Plant study groups and units provide opportunities to share your interest with others. The Arboretum Foundation also operates a plant propagation service for unusual plants of the Arboretum. For a small fee, the greenhouse volunteers will propagate plants for you from the collections. The Foundation's plant sales are another means of learning about, as well as obtaining, unusual plants.

Become an Arboretum volunteer if you want an excellent means of getting a "hands on" education; there are many opportunities to learn while donating your time and energy in areas such as the information desk, gift shop, group tours, plant records, office, library, hortorium, grounds, or greenhouse.

Visit the Arboretum Soon

The Arboretum provides a unique horticultural resource available to anyone for enjoyment and education. Each person using the Arboretum does so with his or her own personal goals. For us to orchestrate anyone's experience too much would eliminate much of the joy of discovery, independent learning, and individual appreciation of the environment in which we all live. Our goals are to make the Arboretum accessible to everyone both physically and intellectually, with resources that can accommodate many different needs. Improvements are continually being made with the visitor in mind—maps and brochures, visitor services, directional and interpretive signage, indoor exhibits, and collection renovation and display development. As an educational institution, our services are designed simply to facilitate, providing guidance and a "menu" of different aids and services from which to choose.

We encourage you to come and explore, make your own discoveries, and enjoy *your* Arboretum.

Lynda J. Ransley is the program coordinator for the Washington Park Arboretum.

Lynda J. Ransley

Fishing near the trail to Foster Island.

Purple Loosestrife Threatens Washington Wetlands

by Kristina G.H. Lau and Estella B. Leopold

Purple loosestrife is a "purple horror" to ecologists. This perfectly lovely, graceful plant growing along the Foster Island marsh trail of the Washington Park Arboretum looks harmless enough; however, it poses a serious statewide threat to wetland habitats and wildlife, particularly to waterfowl and any threatened or endangered species dependent on high-quality wetland.

A member of the family Lythraceae, purple loosestrife (*Lythrum salicaria*) is native to marshlands of Eurasia. Its introduction to North America occurred in the early to mid-1800s when the seeds probably were carried in unwashed wool delivered to U.S. mills (Stuckey 1979) or in ballast from Eurasian ships entering American waterways from the East. By 1985, marshlands in the northeastern United States were infested by this weed. The overgrowth of purple loosestrife has a serious impact on the productivity of water birds and aquatic furbearers because it has crowded out native food plants (Thompson et al. 1987). Purple loosestrife has now started to invade marshes of Washington and British Columbia and is spreading rapidly (Figure 1).

The public, including those with environmental interests, needs information about the seriousness and nature of this problem. Below is a brief description of the plant and a few ideas on how you might help with the control of this menace.

Purple loosestrife is a tall, slender emergent aquatic plant with reddish-purple flowers that bloom from late June to early September. It grows in water up to 12″ deep up on to the shore. Mature plants have numerous stems at heights of six to ten feet above perennial woody rootstock (Figure 2); stems hold spiraling rows of dark brown seed capsules. The seeds are very small—the size of large pollen grains (about 300 microns). Purple loosestrife typically develops into dense pure stands in wetland or marsh areas. Newer infestations are commonly associated with cattails, reed canarygrass, sedges, and rushes.

The presence of purple loosestrife in the state of Washington was first recorded in 1929. It may have been originally introduced as an ornamental plant around buildings and developments. It has since spread to irrigation return-flow channels of eastern Washington and a number of wetland areas on both sides of the Cascade Range. There, it commonly

*Figure 1. Distribution of the exotic aquatic purple loosestrife (*Lythrum salicaria*) in North America, 1985 (from Thompson et al. 1987)*

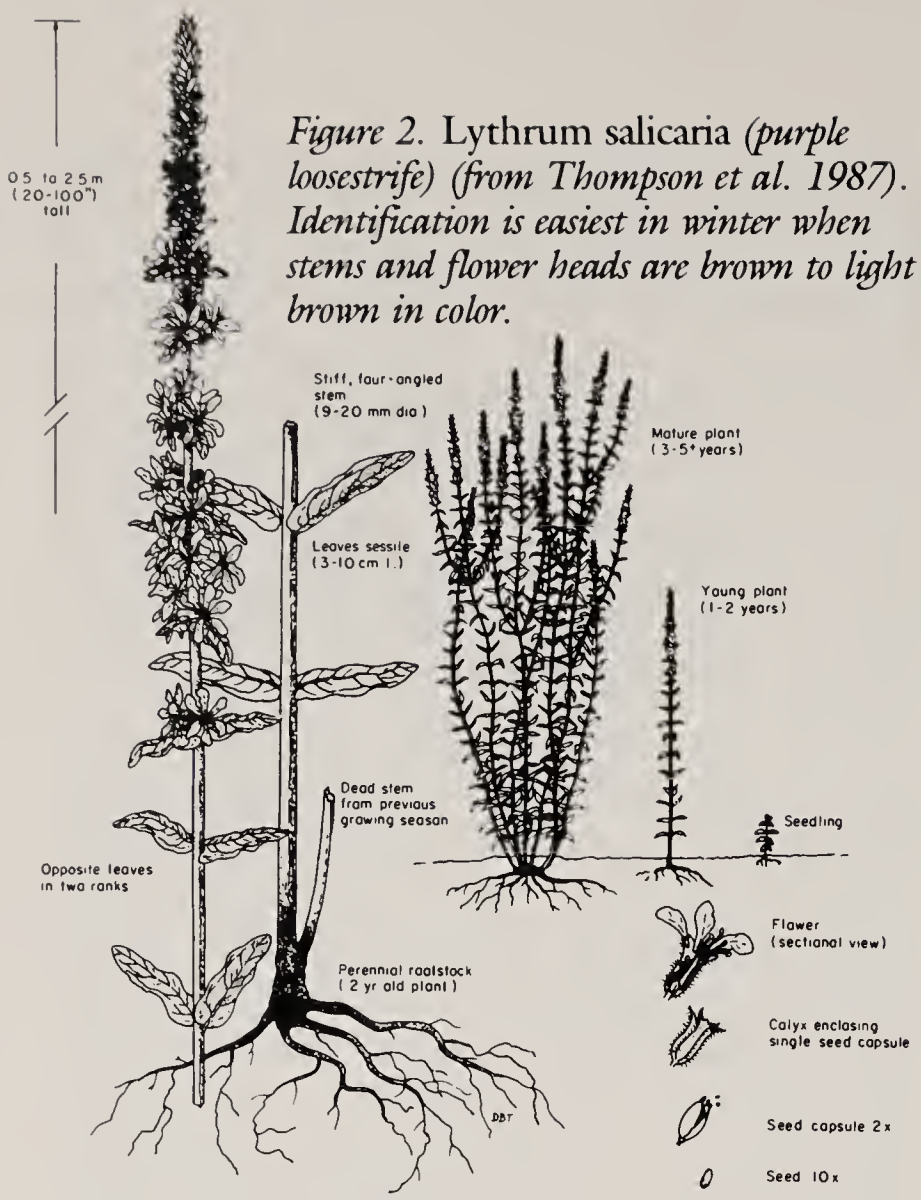

Figure 2. Lythrum salicaria *(purple loosestrife) (from Thompson et al. 1987). Identification is easiest in winter when stems and flower heads are brown to light brown in color.*

outcompetes and displaces native wetland plants, causing a substantial impact on waterfowl. It displaces waterfowl food, yet the weed is unpalatable to them; the resulting reduction of food resources leads to the ruin of waterfowl habitat.

When the shoreline only consists of purple loosestrife, waterfowl and shorebirds also have no place to forage, loaf, display, or rest. For example, at Lake Sammamish in 1988, only a few purple loosestrife plants were found along the northwestern shoreline; now one-half of that shoreline is dominated by tall dense stands (Shirley Taylor, Jan. 1991, personal communication). This overgrowth has degraded cattail communities, thereby destroying wildlife habitats and completely blocking human access to the lake from this shore. At Seattle's Montlake Fill, located east of the University of Washington along Union Bay, the presence of numerous purple loosestrife stands around the ponds is strongly associated with the decreasing species density of waterfowl (Lau 1990). Tall, dense stands of the weed also can be found along the Foster Island marsh trail of the Washington Park Arboretum.

Purple loosestrife is an extremely aggressive competitor; only tall dense shrubs and trees can outcompete it (C. Perry, February 1991, personal communication). About the only sites that it does not grow on are areas of high salinity or alkalinity.

Purple loosestrife is a threat because of its ability to infest and invade wetlands (C. Perry, February 1991, personal communication). The tiny loosestrife seeds are easily distributed by wind, water, animals, and human activity. It is also able to reproduce vegetatively; new shoots can grow from broken-off plant parts that land in a moist environment.

Once the plant is established, it is very difficult—if not impossible—to eradicate. For example, in Idaho an infested area was treated for two consecutive years with an effective herbicide, yet a scattering of plants still remained. Once a seed bank is established in a three-year-old plant, removal or spraying only opens the stands for new seedling growth. The fragile nature of wetlands can make it unfeasible to use heavy machinery for removal. The dense matting of the roots also prevents complete physical removal of the plant. Herbicides have been found to be successful in the short run, yet their environmental impacts—including those of biodegradable ones such as Rodeo,® which contain glyphosate—have not been well studied. Methods of biological control by introduction of certain weevils and beetles are currently being investigated (Thompson 1989). If the insects are approved, they could be released in Washington State in two to three years.

The invasive nature of purple loosestrife is evident to all researchers, yet a controversy exists regarding the effects of this intrusion. Some researchers believe it is not always detrimental to existing habitats. For example, the matting of the purple loosestrife roots has a positive side in aiding the stabilization of soil or shoreline. Because of this controversy, more research on the effects of purple loosestrife is needed.

Yet purple loosestrife stands are already a serious problem to wildlife in localized wetlands of Washington State, Oregon, and British Columbia (Figure 1). Constant, intensive monitoring of wetlands is necessary. Containment, early detection, and spray or removal of first-year plants is crucial to prevent further destruction of wetlands by this weed.

Since August 1990, when a state nursery quarantine of purple loosestrife was established in Washington State, the plant cannot be sold or transported; violations result in a $1,000 fine. Offenders should be reported to the Washington Department of Agriculture to prevent the continued spread of this pest.

Glossary

Micron is .001 of a millimeter.

Species density is the number of different animal or plant species per unit of habitat (i.e., pond surface) area.

What can you do? Learn to identify purple loosestrife. Report isolated occurrences immediately to the local weed control authority or the State Noxious Weed Control Board. Inventory information is extremely valuable. Become involved or form a local volunteer group to develop and implement small-scale eradication programs. Pass the word to neighbors, friends, and co-workers about the effects of purple loosestrife and what needs to be done to prevent its spread. Dan Thompson's (1987, 1989) excellent pamphlets provide valuable basic facts about this problem. Copies can be obtained by writing to Publications Unit, U.S. Fish and Wildlife Service, Washington DC, 20240.

Local interest groups, such as the Coalition to Save Lake Sammamish, have tried small-scale eradication plans but have been unable to keep pace with the rapid spread of the plant. The Noxious Weed Control Board of each county needs to take an active role in controling this weed because control is left to each county's discretion. Let your community and state legislators know your concern. The Washington Department of Wildlife, Washington Department of Ecology, Washington State Noxious Weed Control Board, United States Department of Agriculture, United States Bureau of Reclamation, and Grant County Noxious Weed Control Board have formed a task force to develop and implement plans for the control and monitoring of purple loosestrife in Washington State. To indicate your interest, contact the people listed below.

Acknowledgments

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Nothofagus antarctica 'Puget Pillar': A Trim New Introduction

by Timothy Hohn

The generic name *Nothofagus* (false beech) was selected in 1850 by the German botanist Blume to antagonize his peers (Batavi 1850). It seems that they were at odds over the relationship of these southern-hemisphere trees to the true beech, *Fagus*, of the northern hemisphere. Upon naming, Blume's opinion was solidified. *Notofagus* (without an 'h') means "southern beech," which may be a better common name for these denizens of mountain and lowland because they are found nowhere north of the equator. Whether southern or false beech, the technicalities of flower structure separate it from true beeches in the minds of most taxonomists as distinctly as distance separates them across the land.

Ranging along the southern boundary of the infamous Pacific "Rim of Fire," the genus *Nothofagus* has its largest concentrations (around 16 species) in the soggy uplands of Papua New Guinea and dominates the forest flora of temperate Chile (around nine species) at opposite ends of the "Rim." Native species of southern beech also are found in New Caledonia, Australia, Tasmania, and New Zealand, and fossil remains are found in Antarctica, thus completing a tectonically fragmented picture of a once-united flora.

Storming the volcanic peaks of southern Chile or kayaking stream courses in the arid Andean foothills of Argentina, one is apt to find pockets and forests of *Nothofagus antarctica*. Commonly referred to by Patagonians as the "beggar" (Dimitri 1972), *N. antarctica* dwells in those locations rejected by its brethren. Cowering in cold hollows and tenaciously clinging to windswept coastal moors and precipitous mountain peaks, *N. antarctica* is a hardy little "beggar." Two forms of this deciduous tree are recognized, one a medium-sized forest dweller and the other a krummholz of dwarfism. A deciduous minority amongst a genus of primarily evergreen trees, it has alternating, closely set, broadly ovate leaves to one-inch long that are curiously waved and ruffled. The branchlets are set in one plane giving each tree a layered and distinctive habit, one of particular elegance when they are young. The fall color is a rich russet and some flowering specimens have a pleasing fragrance. *Nothofagus antarctica*, or *Nirre* as it is known in Chile, grows fast in the Pacific Northwest and can, unfortunately, develop a thin and open habit as an older tree.

At the Washington Park Arboretum we have selected a seedling variant of this southern beech that is broadly fastigiate (cone shaped) with dense, upward growing branches. The distinctive planar and layered branching of *Nothofagus antarctica* is still evident, but the crown is more tightly whorled, forming a narrower and fuller head.

This new selection, named 'Puget Pillar', retains many of the same distinctions of branching and all

Glossary

Fastigiate indicates a plant that has upright, usually clustered, branches.

Krummholz is a German term commonly used in botany and ecology to describe the stunted forms of trees found at their upper altitudinal limits, often caused by the wind. "Krumm" means "crooked."

the beauty of foliage typical of *Nothofagus antarctica*. However, its denser crown and upright form make it an even more desirable medium-sized tree for urban landscapes. Mature trees can be expected to reach a height of 40-50 feet in 20 years with a crown spread of 12-18 feet. At maturity, *N. antarctica* 'Puget Pillar' will be reminiscent of mature *Carpinus betulus* 'Fastigiata' in crown shape, but with finer texture and attractively furrowed bark. Our mature tree of 'Puget Pillar' has never suffered serious crotch or crown failures, even during the heavy, wet snowfalls that occasionally plague our area. Though the crown is dense and stable, the small and interesting leaves of this southern beech selection keep its appearance from becoming too heavy and imposing.

Nothofagus antarctica 'Puget Pillar' is best adapted to the western United States in those areas of USDA hardiness zone 7 or above (Sunset Zone 4). These trees should thrive in all parts of the British Isles and the maritime and Mediterranean portions of Europe. It is known in Great Britain that species of *Nothofagus* do not do well on calcareous soils and we must assume that the same applies here. Except in areas of extreme drought, established and mature trees will not require significant irrigation. Open, sunny areas are best, although partial shade, as that from buildings, is suitable. We have not observed any serious pest problems with this plant, although we have noted the presence of small populations of plant hoppers (order: Hemiptera).

The grove of three specimens is northwest of the Graham Visitors Center, west of the lagoon. From the Visitors Center, follow Arboretum Drive to the Foster Island Road; turn west to the next parking lot on your right. The specimen is north of the parking lot.

Nothofagus antarctica 'Puget Pillar' is relatively easy to propagate from softwood cuttings that are treated with a hormone, such as the Woods 1:7 brand, and placed under conditions of high humidity. It would be quite at home in narrow tree lawns, passages, and other tight tree spaces. As one of the larger members of a screen, it would mingle nicely with other hedging materials and conifers. Individual specimens provide striking contrasts against linear, horizontal landscape features such as unbroken walls, fences, and roof lines. The fall foliage of this upright *Nirre* is particularly rich in contrast with light yellows, such as *Hamamelis virginiana* foliage and flowers. No matter how it is used, *N. antarctica* 'Puget Pillar' is the botanical aristocrat of the species.

Timothy Hohn is curator of living collections at the University of Washington Center for Urban Horticulture and Washington Park Arboretum.

Limited numbers of plants found in the Arboretum and described above can be propagated by the Pat Calvert Greenhouse for members of The Arboretum Foundation.

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Between the winter garden and spring landscape is a time for special flower, bark, and leaf color. Plant the species found in the article by November for pre-spring flower next year; they are available in Puget Sound nurseries. An asterisk (*) indicates Washington Park Arboretum plants.

Late Winter, Early Spring Color

by Daniel J. Hinkley

Midwinter spring is its own season
Sempiternal though sodden towards sundown,
suspended in time,
Between pole and tropic—
T.S. Eliot, from Four Quartets

During the season when our senses are dulled by the monotony of rain and flat, gray skies, fragrance from **Chimonanthus* and **Sarcococca*, and colors of *witch hazels come to the rescue. Yet these and other commonly used winter-blooming plants have long finished their season of interest as the days begin to lengthen. The hibernal landscape from mid-February through the Ides of March seems most barren—especially during years, such as this, that our gardens have suffered so from arctic winds. And from this prolonged dreary scene, spring arrives, an unfolding drama of changes and colors, flooding the senses with ephemeral thrills that two months earlier would have been so welcomed.

A well-planted garden, however, will allow a slow approach to the spring's zenith. It will include species of plants, largely ignored, that beckon the horticulturist from the winter garden down a winding path to that moment when colors, like great flocks of birds, fly into your garden. It is during this time of the year, as well, with fewer distractions from the abundant colors of late spring and summer, that thoughtful combinations to excite the senses seem less difficult to achieve.

Consider *Forsythia giraldiana*, a little-known yellow-bell that is an excellent choice for the mid-winter garden. This species, from northwestern China, is less vigorous in growth than the many hybrid *Forsythias* common to our landscapes. The flowers, pale yellow, are borne profusely on dark stems for a three-week period often beginning in mid-to-late February. Planted at the base of this *Forsythia* in my garden is a contrived splash of the early-flowered *Crocus vernus*—with lavender petals and bright gold anthers it answers the *Forsythia* nicely when both are in flower.

One of the unsung gems of Northwest gardening—manzanita, as it is commonly called—produces slightly drooping terminal clusters of soft pink urn-shaped flowers in late February. This small, irregularly shaped tree attracts a devoted following—not for its flowers as much as for its red, almost sensual, bark and persistent gray-green leaves. Because members of this genus are unsuccessfully moved once established in the ground, **Arctostaphylos manzanita* should be produced in containers and transplanted to a permanent site when relatively young. A venerable specimen can be seen in the rock garden along Lake Washington Boulevard East on the south end of the Washington Park Arboretum. *Arctostaphylos manzanita*, though native to California, succeeds well in our more northern climate and shows little damage from the blasts of wind and cold. Position it in full sun with a well-drained, sandy soil.

Jewel-like strands of yellow and green on purple could best describe the drooping flower spikes of most species of *Stachyurus*. The most commonly encountered species, **Stachyurus praecox*, is a multi-stemmed Japanese shrub that ultimately reaches a height of fifteen feet. Axillary inflorescences, to five inches in length, are produced in abundance along the young purple stems of this shrub in early to mid-March. One of the most effective uses of *Stachyurus* I have seen was in a planting with **Acer griseum*, the paperbark maple. The drooping yellow spikes of *Stachyurus* sparkled in contrast with the flaky cinnamon crust of the maple branches with which it was intermingled, giving a magical effect. In spring 1990, I received from Japan plants of *S. praecox* 'Aureomarginata' as well as '*S. praecox* 'Variegata'. 'Aureomarginata', the much better of the two, has leaves brightly margined with yellow which remains throughout the summer; *S. praecox* 'Variegata' has weak blotches of white throughout the leaves. Find *Stachyurus praecox* and *chinensis* species in the Joseph A. Witt Winter Garden.

The genus *Ribes* is well represented in the native flora of Washington State, with perhaps the best known and most utilized being **Ribes sanguineum*, commonly referred to as the red flowering currant.

This plant is underused in landscapes throughout the Puget Sound and deserves more recognition as a superb late February through March-flowering shrub. The flower color varies considerably throughout its native range, from Alaska to northern California, with deep reds through light pink. Several selections with white flowers are also available. A massing of plants representing these color variants, including the many intermediate pink shades, is an extraordinary sight amidst a still-sleeping landscape. *Ribes sanguineum* and other species of this genus serve as alternate hosts to white pine blister rust, a fungal disease that can seriously infect our native and exotic five-needle pines. To avoid problems, the currants should be planted 1,000 feet or ½ mile from white pines.

Ribes sanguineum is not the only desirable species of this genus to be considered for visual interest during the stale months of early spring. **Ribes laurifolium*, an evergreen species from China, is an extremely early bloomer that bears drooping creamy yellow flowers in late February and early March. Unlike *R. sanguineum*, *R. laurifolium* is a low-spreading shrub that will not usually exceed three feet in height. The dark evergreen foliage is most un-*Ribes* like and is attractive throughout the year. *Ribes laurifolium* is a dioecious species with male plants having larger flowers, thus being the more desirable in regards to ornament. The Arboretum's specimen is in the lath house.

The many species of *Corylopsis*, the winter hazels, could by themselves be used as a continual source of fragrant, soft yellow flowers from early winter to beyond the vernal equinox. Each species has its own time in the sun, with significant overlapping of bloom sequences. The earliest species of the lot is the most frequently encountered in our landscapes, **C. pauciflora*. This is the most diminutive of the genus, ultimately no taller than four feet with a spread of four to six feet. In my experience, this species is the least sun tolerant of the genus, and should be provided a sheltered position to avoid unsightly scorched leaves. Its specific epithet "pauciflora" refers to the number of flowers (1-3) per inflorescence rather than the paucity of flowers on the shrub as a whole. The lemon-yellow flowers are sweetly scented, yet, in my opinion, far from overpowering.

As the flowers of *Corylopsis pauciflora* begin to fade, those of **C. spicata* are just gearing up for the race and, in turn, will hand the baton to one of the finest species, **C. sinensis*. *Corylopsis spicata* and *C. sinensis* both have large flower clusters, each composed of up to 15 florets, and are of large stature, up to 15 feet in height. *Corylopsis sinensis* has many geographical variants, all of which are equally effective in the landscape. My favorite in flower, form, and foliage, however, is **C. glabrescens*. The flowers are seen as drooping spikes to two inches in

Glossary

Anther is the part of the stamen that contains pollen.

Dioecious indicates production of male and female flowers on separate plants of the same species.

Inflorescences are flower clusters of a plant.

Pedicel is a plant stalk of a single flower.

Raceme is an inflorescence composed of a single main stem (rachis) to which are attached individual flowers. Racemes differ from spikes by having the flowers attached to the rachis by pedicels rather than being directly attached.

Stamen is the male organ of a flower, consisting of an anther and usually a filament.

length, and borne on naked stems in early to mid-March. The foliage emerges with a wonderful bronze green color, and later takes on a hint of blue. Intermediate in size, *C. glabrescens* will not exceed eight feet in height and tolerates both full sun and partial shade. It also is considered to be the hardiest of all *Corylopsis* species. Find many *Corylopsis* species in the Joseph A. Witt Winter Garden.

Contrasting extraordinarily well with the soft yellow of the winter hazels are the brassy purple-red flowers of **Daphne mezereum*. Oddly scarce in the landscapes of western Washington, this fragrant daphne puts on a good show in mid-February with leafless stems to six feet in height, coated with waxy, brightly colored flowers. Unfortunately, the red berries produced after flowering—an attraction in themselves—are very poisonous. *Daphne mezereum*, like other free-fruiting daphnes, should be avoided in landscapes whose fauna include inquisitive toddlers. The more subdued white form of the species can be observed in the Joseph A. Witt Winter Garden.

Another, yet more subtle, combination with *Corylopsis* is the genus *Neillia*, composed of several species. Of the four species growing in my garden, the showiest is *Neillia longiracemosa*. Taxonomists made no attempt to hide the significance of this species, and indeed it does have the longest flower racemes of the genus. The flowers are a clear deep pink and have a delicate beauty which is greatly appreciated in mid-March. *Neillia longiracemosa* is undeservingly obscure in western horticulture, and though it will ultimately become a shrub of significant stature, to ten feet, it is easily and effectively pruned to keep the size in bounds. A closely related species, **N. sinensis*, is in the lath house near the Graham Visitors Center; another species, **N. affine*, can be seen adjacent to the now-closed Lynn Street foot bridge parking lot.

Far from encyclopedic, I have offered only a few suggestions from countless numbers of plants that we often fail to consider for lengthening the seasons of our horticultural enjoyment. Many species and hybrids of rhododendrons, a subject unto itself, also would be excellent choices for early color. Using late winter and early spring shrubs both pacifies the longing for spring and softens the transition between a sleeping and suddenly awakening landscape.

Daniel J. Hinkley is an instructor of horticulture at Edmonds Community College. Recently he joined the board of directors of the Seattle Chinese Garden Society and is co-chair of its horticulture committee. Dan is a member of the editorial board of the *Washington Park Arboretum Bulletin*.

The Northwest Garden Explorer

Woody Plants of the Medicinal Herb Garden

by Mary Booth

Some trees and shrubs in the University of Washington's Medicinal Herb Garden boast their own pharmacological properties, and many woody specimens form the Garden's design backbone.

An asterisk (*) indicates species, including varieties and/or forms, that can be found in the Washington Park Arboretum.

Degree of difficulty: Level walking. Mostly wheelchair accessible.

Best time of year: April to July, prime. June and July, peak flowering time. March and April, new growth. Late summer, seeds and berries.

Parking: By car, drive to the west gate of the University of Washington (15th Avenue NE) and follow Stevens Way south and east to C-10 parking. This lot is free on Saturday afternoons and Sundays. Other times, obtain information and a map from the gatekeeper.

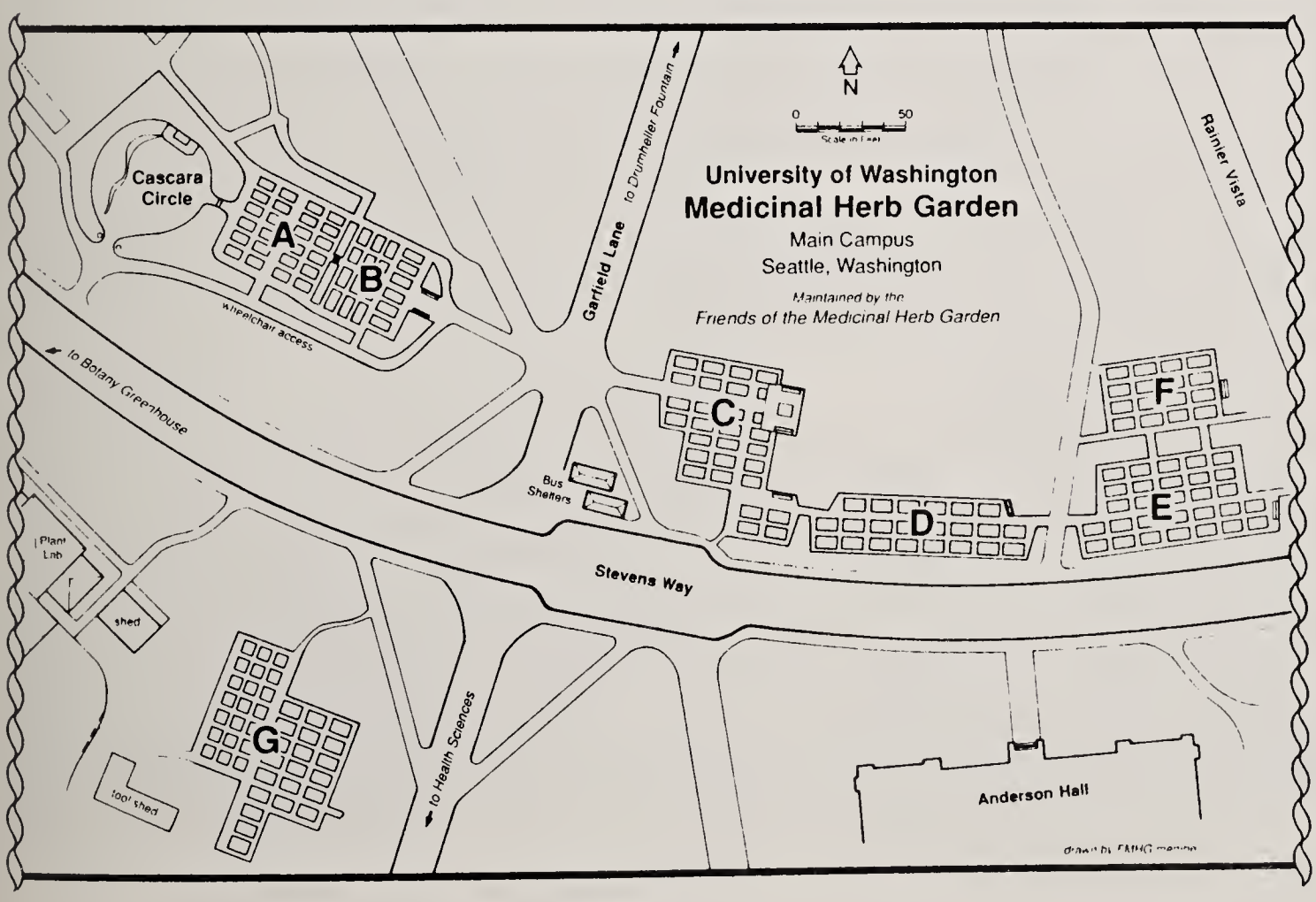
Buses: Call Metro Transit, (206) 447-4800.

Address: University of Washington, Seattle (see map)

Tour: Call Friends of the Medicinal Herb Garden, (206) 543-1126.

When it started in 1911, the University of Washington Drug Plant Garden comprised the two-acre area now known as the Medicinal Herb Garden. The whole field of pharmacognosy was more central to the University pharmacy curriculum at that time because plants were the only source of many medicinal drugs. This situation began to change with the advent of synthetic drug production in laboratories after World War II.

Over time the role of the Garden has changed, especially as its relevance to the Pharmacy programs declined. In view of its historical and botanic interest, the maintenance was assumed by the Department of Botany in 1979, much aided by a volunteer group, the Friends of the Medicinal Herb Garden. Garden users now represent a diversity of interests, whether collegian or those of the general public. Students from zoology, landscape architecture, the Center for Urban Horticulture, forest resources, and beginning and advanced students of botany, now use the garden. Interests of the general



This monkey greets you at Cascara Circle, at the Medicinal Herb Garden entry (far left).

Glossary

Exfoliate means to come off in thin sheets or layers, as with tree bark.

Herbaceous plants are seed plants (annuals or perennials) that do not develop woody, persistent tissues (as do shrubs and trees).

Pharmacognosy is the science dealing with the composition, production, use, and history of drugs derived from plants and animals.

public are equally varied, including weavers looking for natural dyes, cooks exploring flavorful additions to their herb collection, armchair anthropology buffs looking at indigenous plants used by Native Americans, and health-conscious individuals wishing to discover more natural and gentle alternatives to many household and beauty products.

The herbaceous material is not the only plant group in the Medicinal Herb Garden with special properties recognized by the diverse groups listed above. The Garden also has trees and shrubs. Most of the Garden is tucked behind and integrated with the continuous shrub plantings located along Stevens Way in the south part of the main university campus. These shrubs and some trees ensconce it like a secret garden filled with very important plants. Some of the woody plants contain special properties; many serve as a structural and design component.

Various woody plants of the Medicinal Herb Garden are discussed below for their special properties, as well as their use in the landscape. The Garden itself is laid out as a series of intimately scaled outdoor spaces.

Cascara Circle

Entering off Stevens Way, near Benson Hall, the first enclosure is ringed with native shrubs backed by taller deciduous trees, including the native cascara. The center of this circular area is a flat lawn accented by a narrow water course that meanders through the grass.

Many of the Medicinal Herb Garden's indigenous plants in Cascara Circle were used by Native Americans and later by the European settlers. Three of these native shrubs also would make excellent structural plants in a residential garden.

The berries of salal (**Gaultheria shallon*), evergreen huckleberry (**Vaccinium ovatum*), and

Lynn Brady, courtesy Friends of the Medicinal Herb Garden

*From Section A of the Garden toward Section B, through two English yews (*Taxus baccata *'Fastigiata Aurea').*

tall Oregon grape (**Mahonia aquifolium*) were enjoyed by Native Americans, both fresh and preserved for winter use. The root of Oregon grape was used in herbal medicine as a blood purifier and a treatment for sore throat (Gunther 1945). It also was used to make a yellow dye, especially for bear grass (*Xerophyllum tenax*) which was used in Indian basketry. Oregon grape root is still included in contemporary publications about herbs (Mabey 1988).

The tall Oregon grape plant distinguishes itself in the Garden with year-round seasonal interest. In spring, the large fragrant yellow flower clusters are delightful; flowers are followed by the coppery color of the new foliage, which changes to dark glossy green by mid-summer. Deep blue fruit clusters attract birds in early fall, and winter weather may give some of the foliage a deep red tint, especially plants in full sun. This is a tough plant that tolerates shade to full sun, is not too fussy about soil type, and can take summer drought once established. As a single accent plant or a larger grouping, Oregon grape earns its keep in the home garden.

Japanese Holly

The shrub bed along the north side of Cascara Circle has a mature Japanese holly (**Ilex crenata* 'Latifolia') anchoring each corner; the specimens are male. The small boxwood-like foliage is especially nice next to the native evergreen huckleberry that shares its small leaf size. The branching of both plants is dense, but still graceful.

The Main Medicinal Herb Garden

Upon leaving the native plants of Cascara Circle, you also leave behind its informal character and enter spaces with more geometry and order. A grid pattern of rectilinear planting beds fills each remaining garden enclosure, reminiscent of orderly medieval gardens or cloistered monastery gardens depicted in old woodcut block prints. The perimeter of each enclosure is geometric, with clipped hedges or other solid shrub plantings defining the edge. The scale is still small and very charming.

Each individual planting bed contains two species of plants. These annual and perennial herbaceous plants are the main focus of many garden visitors, but the woody-stemmed shrubs and small trees that form the perimeter of each garden are worth some attention and may provide fresh ideas for your home garden.

Several woody-stemmed shrubs in the Medicinal Herb Garden are handsome broad-leaved evergreens with glossy foliage that gives a bright, clean look to the plant. They have been used as a structural element in mixed hedge plantings that line the south boundary of the garden, paralleling Stevens Way.

Tea Family

The first hedge planting marks the south boundary of the Garden (areas A and B), adjacent to Cascara Circle. This hedge contains two members of the tea family (Theaceae), the tea plant, **Camellia sinensis*, and **Ternstroemia*, which are used as structural plants to form a wall of foliage enclosing the Garden. Both are hardy in our climate, but not commonly planted in our gardens. Either plant would make an attractive addition to a home garden, especially where they are used in combination with other acid-soil-loving broad-leaved evergreens.

**Camellia sinensis* (formerly *Thea sinensis*), has dark green foliage and grows to 12 feet or more in height. It is more graceful in appearance than **Camellia japonica*, with 1½"-wide fragrant white flowers in the fall. Give it the same well-drained, but highly organic, soil that you would provide for rhododendrons or other camellias. Camellias are deep rooted and much more drought-tolerant than people think, but they need shelter from strong winds and prefer shade or early morning sun. There is an extra attraction for me to plants such as this that have a long history of cultivation and use. For almost 3,000 years *C. sinensis* has been grown and valued in China for its fragrant leaves. It is still in commercial production there, as well as in India and other areas of Asia.

Ternstroemia

**Ternstroemia gymnanthera* is a handsome, refined-looking shrub for a home garden. It can be used in the foreground or background of a shrub border. *Ternstroemia* grows slowly to as much as 8 feet, but is easily kept at 3 feet with light trimming. The full, rounded shape often makes it wider than tall. The dark green foliage takes on reddish/maroon tints in winter, and the new spring growth is a lovely copper color. It prefers full sun, but will tolerate half-shade. *Ternstroemia* takes most soil types if they are well-drained.

Several of the many other interesting and unique woody plants in the Medicinal Herb Garden are discussed below.

Fortune's Osmanthus

A single specimen of Fortune's osmanthus (**Os-*

Lynn Brady, courtesy Friends of the Medicinal Herb Garden

Section D, looking to E. The hedge along the right border is Ligustrum japonicum. Crataegus *species line the other side of the hedge.*

manthus x *fortunei*) has large, glossy holly-like leaves that give the plant a bold, but solid, texture. It is a very fragrant large plant of 15 feet high by 10 feet wide with a rounded to oval outline. The specimen in the Medicinal Herb Garden effectively serves as a strong entrance marker. Look for it on the south side of the path leading from Garfield Lane into Area C.

Hawthorn

A privet hedge is the south boundary planting in garden area D. This line is punctuated with small deciduous hawthorn trees (labeled *Crataegus coccinea*, but now *C. biltmoreana* or *C. pedicellata*). There are three different species in the Garden, five specific trees in all. Both the leaves and flowers of hawthorn have a long history of use in herbal medicine, including the treatment of blood pressure problems, as well as other heart and circulatory diseases (Mabey 1988). Its effect on blood pressure is interesting: apparently, hawthorn has the ability to lower high blood pressure as well as to raise low blood pressure to normal.

Crape-Myrtle

Crape-myrtle (**Lagerstroemia indica*) is a small, multi-stemmed deciduous tree with beautiful exfoliating bark, reminiscent of **Stewartia*. Located on the north side of the path connecting areas C and D, it can grow over 30 feet in height; the Garden's larger specimen is 32 feet. Crape-myrtle prefers a warmer climate than the Pacific Northwest, but if you place it in a warm, sheltered spot, it may flower for you. The flowers are arranged in large clusters like a lilac bush. Crape-myrtle comes in several colors—red, pink, purple or white—and blooms in September.

Bay Tree

At the east end of Garden E is the bay laurel tree (**Laurus nobilis*). It is a broad-leaved evergreen member of the laurel family (Lauraceae), as are cinnamon (*Cinnamomum zeylanicum*) and camphor (*Cinnamomum camphora*). Bay's most familiar use is as a culinary herb. The oils extracted from the highly aromatic leaves are used in beauty products and perfume. The bay tree is part of a clipped hedge that forms one side of the Herb Garden enclosure.

As a plant for the home garden, bay contributes an olive green foliage color and would make an excellent background plant to give structure to a planting bed. The style of your garden and available space will suggest how you manage its growth. For an informal look, allow it to grow naturally into an upright oval, heavily branched tree reaching 20 feet in height (eventually taller) with a 6-8′ spread. For a smaller space or a more formal garden style, the bay tree can be clipped into a hedge as in the Medicinal Herb Garden. It can be kept at a height from 3 feet to 15 feet, with the leftover clippings saved for the kitchen. Give the plant full sun and well-drained soil. Once established, it tolerates summer drought, typical of plants that share its Mediterranean origin.

As you walk west along the bay hedge, you pass English holly (**Ilex aquifolium*) with its almost black green foliage, then Japanese privet (**Ligustrum japonicum*), with its yellow-green leaves.

Daphniphyllum

The large-leaved **Daphniphyllum macropodum* resembles a rhododendron without the latter's showy flowers. Female plants have beautiful blue clusters of berries, though this one is male. The shrub is native to Japan and a healthy single specimen is located in the Garden at the southeast corner of Area F. In a home garden, give the plant some shade and moist, slightly acidic soil.

Podocarpus

To the north of Area F, another unusual understory plant can be seen. The plum-fruited yew (**Podocarpus andinus*) is native to Chile and Argentina and is a handsome evergreen, useful as a background plant. This is a male specimen, but the fruit of female plants is edible and apparently tastes like grapes, and the seeds were eaten by South American Indians.

Visit the Medicinal Herb Garden

There are interesting plants to observe in the garden at any time of year. Doug Ewing, manager of the University of Washington's botany greenhouse, supervises its maintenance. Because of the many herbaceous plants, he says that April through July is a prime time, with June and July the peak time for flowers. But early spring—late March and April—is his personal favorite, when the herbs are just pushing through the soil and beginning vigorous growth. That sense of exploding new plant life can almost be felt as well as seen. The Garden also is interesting in late summer and fall when flowers change to seeds and fruits.

Visit the Garden on your own or contact the Friends of the Medicinal Herb Garden for a tour: Friends of the Medicinal Herb Garden, Botany Department KB-15, University of Washington, Seattle, Washington 98195, (206) 543-1126.

Mary Booth, a landscape architect, is a vice president of The Arboretum Foundation and member of the *Arboretum Bulletin* editorial board. Mary recently contributed to *Butterfly Gardening*: Summer Magic in Your Garden by the Xerces Society and Smithsonian Institution (published by Sierra Club Books).

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Mabey, Richard (consulting editor). 1988. *The New Age Herbalist*. New York: Collier Books/MacMillan Publishing Co.

A book list on medicinal herbs can be found at the Elisabeth C. Miller Library, Center for Urban Horticulture.

Northwest Hort Review

The "Key Plant" Concept

by Van M. Bobbitt

Integrated pest management (IPM) depends on frequent monitoring of plants for pests so that control strategies are used only when and where needed. A variety of control strategies may be employed, including cultural, mechanical, biological, and chemical (Bobbitt 1990).

Concentrate on the Plants that Need the Most Attention

IPM may seem too complicated to many home gardeners. Instead of just applying pesticides to the entire landscape at regular intervals, the IPM practitioner must have detailed knowledge of landscape plants, their cultural requirements, and their pests. The number of plants and pests encountered in a residential landscape can seem overwhelming, but the complexity can be simplified by concentrating on "key plants"—those that require the most attention from the gardener.

Look for These "Key" Characteristics

1. **Serious, persistent pest problems**. For example, researchers at the University of Maryland found in the Washington, DC, metropolitan area that roses, ornamental cherries and plums, dogwoods, pyracantha, and flowering crabapples had severe pest problems, whereas viburnums, yews, hollies, and forsythia were seldom bothered (Raupp et al. 1985).

2. **Extreme value**. A single, rare specimen or focal point in the landscape may require extra attention even though it is generally free of problems.

3. **High maintenance requirements**. Dr. James Clark, University of Washington Center for Urban Horticulture, points out: "A perennial border might not experience major or significant pest problems, but it would be considered a 'key plant' group due to other maintenance requirements."

William Eng, Courtesy of CUH

Rhododendrons *are key plants in western Washington.*

Western Washington Key Plants: Watch for Pests

What are the key plants with which western Washington gardeners should be concerned? A recent survey of 32 Washington State University (WSU) Master Gardener volunteers, extension agents, and extension assistants gave some indication of those plants that are "key" by virtue of their susceptibilty to pest problems. These persons, who are constantly diagnosing plant problems for home gardeners, were asked to list the landscape trees and shrubs that are most frequently brought in for diagnosis. They were then asked to identify the primary pests of each.

Most of the respondents listed rhododendrons (88%), dogwoods (81%), spruces (59%), and roses (53%) among their key plants. Azaleas were the fifth most commonly mentioned plant, receiving votes from 44% of the respondents. Of these plant groups, rhododendrons and dogwoods each had only one predominant pest mentioned, while spruces, roses, and azaleas each had two or more common pests (see Table 1).

Table 1. Woody ornamentals and pests most frequently encountered by WSU Master Gardeners, extension agents, and extension assistants in western Washington, 1991.

Plant	Pest
Rhododendron	root weevil
Dogwood	dogwood anthracnose
Spruce	spruce aphid cooley spruce gall adelgid spruce spider mite
Rose	powdery mildew, aphid, black spot, rust
Azalea	azalea leaf gall, powdery mildew

Put Key-Plant Information to Practical Use

Select Resistant Plants

Rhododendrons are listed as a key plant because of root weevil damage. But many rhododendrons are almost immune to the leaf notching caused by root

weevils. It is not necessary to forsake rhododendrons, just choose the resistant cultivars or species (Antonelli and Campbell 1986).

Likewise, there are lists of rose cultivars that tend to be more resistant to disease problems in the Puget Sound area (Pinyuh and Taylor, no publication date given). Dogwoods are on the key-plant list due to dogwood anthracnose disease which attacks the leaves and twigs. But this fungal disease is most severe in our native dogwood (*Cornus nuttallii*), whereas *Cornus florida* and *Cornus kousa* are much less likely to exhibit symptoms. Avoid problem-prone species such as Colorado blue spruce in favor of another conifer.

Take Care in Cultural Practices and Environment

Dogwood anthracnose disease can be mitigated by certain cultural practices: pruning out infected twigs, raking up diseased leaves in the fall, and destroying these contaminated materials so they do not reinfect the tree (Davidson and Byther 1989).

Powdery mildew on roses can be reduced by attention to the plant environment. Space plantings to provide good air circulation, avoid damp and shady planting sites, remove and destroy infected twigs and leaves, avoid irrigation practices that keep the plant's habitat humid, and avoid heavy applications of nitrogen fertilizer. Nitrogen can stimulate excessive succulent growth which is more susceptible to powdery mildew infection (Maloy 1989).

Prepare Before Problems Begin

Spruce aphid damage usually is not noticeable until late spring, but treatments must be applied when aphids first appear on the needles, which may be from late fall to March. Be aware of this insect, and start monitoring for its presence in the fall (Antonelli 1989). For fungicides to be effective against dogwood anthracnose, applications must begin at bud break, before symptoms appear.

How can a key plant list be useful to you? First, it can help avoid problems by selecting plants that are resistant to major problems. Second, this information might enable you to alter cultural practices and environmental conditions in a way that would mitigate the problem. And, finally, knowing the major problems of key plants can allow us to be prepared to time control strategies for optimum effectiveness.

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Van M. Bobbitt is a member of the editorial board of *The Washington Park Arboretum Bulletin*. He is the Master Gardener/Urban Horticulture Coordinator, Washington State University Cooperative Extension, Puyallup, Washington.

In the Washington Park Arboretum

by Timothy Hohn

The Winter Weather Was Frightful

One of the lowest temperatures ever recorded in the Arboretum occurred on December 21, 1990, with 5° F—two degrees higher than 1950's record. Winter had begun. Typically, this severe weather was preceded by a rather mild autumn, leaving plants relatively unprepared for the freeze. Twelve inches of wet snow helped to insulate some plants from the severe cold but caused a great deal of physical damage to others, due to its weight. Following a brief thaw that melted most of the snow, again we experienced severe cold with two successive nights of 10° F. Bright sunshine and sub-freezing daytime temperatures during these periods of intense cold have wreaked havoc on broad-leaved evergreens with as much leaf burn as we have ever seen.

An assessment of the monetary value of the tree loss to the Arboretum from snow-toppled trees and breakage is $256,000. In addition, clean-up costs for all plant damage, debris, etc. is estimated at $100,000 in contractor and staff time. Fortunately, to help reduce this financial burden, the Arboretum Foundation Unit Council appropriated $20,000 for emergency clean-up. The Safeco Insurance Company granted the University of Washington $15,000 for this cause, and we have received many smaller donations from individuals. Arboretum Horticulturist Chris Pfeiffer procured the volunteer services of several tree care companies to help with the clean-up. They were Seattle Tree Preservation, Etherton Tree Care, City Foresters, Davey Tree Expert Company, Chip Kennaugh, and the tree crew from the Broadmoor Country Club. As of this writing, others are scheduled to volunteer their time as well. We have had wonderful support during this difficult time.

Propagation Activities Are Delightful

Though the weather outside was frightful, our propagation activities are delightful. Since assuming the job of propagator, Barbara Selemon has organized this facet of our plant collections program to an impressive state of efficiency. Our propagation records, methods, and follow-through are the best they have ever been.

New Plants

Planting usually continues from the onset of cooler temperatures and plentiful rainfall in the autumn, through the winter, but 1990-1991 was different with planting interrupted on December 18. Before the cold weather, we planted on display in the Arboretum 182 plants representing 34 accessions. New plants included National Arboretum introductions of *Lagerstroemia* hybrids, *Cercis yunnanensis*;, *C. silaquastrum* f. *alba*, and *Pterostyrax psilophylla*, among others.

More Noteworthy Accessions: Fall 1990

535-90 *Fitzroya cupressoides* (Cupressaceae family): which grows into a gigantic timber tree in temperate South America; wild-collected material from the University of California, Berkeley.

534-90 *Fothergilla gardenii* 'Blue Mist' (Hamamelidaceae family): a beautiful small fothergilla with blue-green foliage, from the Morris Arboretum, University of Pennsylvania.

588-90 *Cupressus montana* (Cupressaceae family): an unusual true cypress grown from wild-collected seed from Mexico, and donated to the Arboretum by Mr. Kost of Portland, Oregon.

To summarize 1990 propagation activities: Total accessions in the production area, 839; total 1990 accessions, 503.

Timothy Hohn is the curator of living collections, University of Washington Center for Urban Horticulture and the Washington Park Arboretum.

Book Reviews

The Simple Act of Planting a Tree. The TreePeople with Andy and Katie Lipkis. Jeremy P. Tarcher, Inc., Los Angeles. 1990. 236 pages. ISBN 0-87477-602-3. $12.95.

Andy and Katie Lipkis are quite possibly the most visionary leaders in urban forestry today. Their central belief is that planting trees is a way of healing the environmental ills of the earth. Doing so not only benefits the area immediately surrounding the tree, but acts to reduce the more large-scale problems of atmospheric pollution and global warming. It is Andy and Katie's vision that individual people, planting single trees in individual cities and towns, have a cumulative impact that can be measured on a worldwide scale. *The Simple Act of Planting a Tree* is their articulation of that vision.

The primary agency for the implementation of this vision, this act of planting a tree, has been an organization known as TreePeople that Andy started while still in school. The book reflects the experiences of the TreePeople in building coalitions, acquiring resources, and never giving up in the battle to plant trees. Along the way, Andy, Katie, and TreePeople managed to receive national attention, appear on Johnny Carson, and close a freeway for a day. Their work culminated in a campaign to plant one million trees in the Los Angeles area for the 1984 Olympic Games. In this campaign, TreePeople shared their vision for a healthier environment with more individuals than one could count.

The Simple Act of Planting a Tree can be seen as an urban tree planter's primer. Although it is subtitled, "A citizen forester's guide," the book is really about the healing values of trees, both physical and psychological. It has three main sections. The first deals with the broad ideas and concepts that make up Andy and Katie's view of the place that trees play in the world—of having ordinary people become citizen foresters.

The second section deals with the technical aspects of planting trees in urban areas, such as soils, tree type, planting details, and aftercare. Although Pacific Northwest arborists might quibble over the preoccupation with container-grown nursery stock, this section is an excellent overview of the challenge of actually growing trees in cities. It is intentionally written for citizens: the person on the city council, in the corporate giving office, or in the next block. For this audience, the book is superb.

The final section is called, "The Notebook." It is a step-by-step guide to organizing tree plantings in communities. It covers everything from the idea of planting trees, to organizing the effort and putting trees in the ground.

Andy and Katie Lipkis have produced the consummate guide to urban forestry at the community level. The vision that they share will inspire readers to take action, then offers a method for that action. It is a book for giving—to local politicians, to people in business, to others who share a concern about the quality of life in cities. It is a book not just for those of us interested in trees. Perhaps, more importantly, it is a book for everyone.—James R. Clark

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James R. Clark is an associate professor at the University of Washington's Center for Urban Horticulture.

Westonbirt, The Forestry Commission's Finest Arboretum. Deni Bown. Julian Holland Publishing Ltd., Baltonsborough, Somerset, United Kingdom. 1990. 127 pages. Color and other plates. 8.95 £ sterling (about $20.00).

Westonbirt, the world-famous arboretum in western England, is about 20 miles northeast of Bath. It was begun by Robert S. Holford in 1829 at the age of 21 and continued by him until his death in 1892 with the assistance of his son, Sir George Holford. He remained until 1926, at which time the estate totaled 16,400 acres. It continued in the family until 1956 when the property was handed over to the Forestry Commission in lieu of paying death duties to the British government. In 1927, the magnificent Westonbirt House, built by Robert Holford in 1863, was sold with 550 acres of land to become a girls' school, which it still is today.

Only a few men were employed in 1956 when the Commission took it over. The task of mapping and cataloging the collection was not completed until 1983! It now totals some 17,000 plants, representing 3,500 taxa in 300 genera. The index to this book shows the extent of their variety, from *Abelia* to *Zanthoxylum*, with many other familiar genera between them.

The fascinating history of an arboretum that had been in the hands of one family for 127 years occupies 34 pages of this book. It includes details of

the various plantings by successive owners, although Robert Holford and his son, Sir George, were primarily responsible. Sir George employed Mr. A.B. Jackson of Kew Gardens to compile a catalog of the woody plants at Westonbirt, which was published in 1927 just after his death. Other information concerns the severe storms which at intervals decimated the trees—especially the unique ice storm of January 1940, the prolonged snowfall of early months of 1946, and wind storms of January 1976 and March 1987. The curator from 1926 to 1956 was W.J. Mitchell, whom I had the opportunity to meet on several visits during the 1930s when working at the University of Bristol Research Station. Included in the book are the geology of the soils, remarks on the climate, and rainfall records.

The remainder of the book is divided into winter, spring, summer, and autumn—describing and illustrating the Arboretum at those seasons. The color photos here are by the author, taken over one year, and give a good idea of the variety of woody plants there at those seasons, especially in October when the Japanese and other maples are at their peak of color. The National Collection of these maples is held at Westonbirt.

Other large collections are of many conifers, often planted as background to deciduous trees such as cherries (which are well represented), magnolias, rhododendrons and azaleas, hydrangeas, and other shrubs. The lindens (*Tilia*) are especially favored here, as are the oaks (*Quercus*), and buckeyes (*Aesculus* species and hybrids). At least three species of maples growing in the Washington Park Arboretum originated from seeds received from Westonbirt in 1947 and 1960: *Acer capillipes*, *A. distylum*, and *A. palmatum* and its clone 'Koshimino'.

Dendrologist Alan Mitchell has written a foreword to this useful and attractive small book, having known the Arboretum well for many years when employed by the Forestry Commission. It will be valuable to visitors there and even more so to those who have not seen it and would like to do so.—Brian Mulligan

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Brian Mulligan, lifetime member of the *Washington Park Arboretum* editorial board, is director emeritus of the Washington Park Arboretum and a native of Ireland.

New on the Shelves
of the Elisabeth C. Miller Library

by Valerie Easton

Bassett, David. **Delphiniums**. Wisley handbook. London: Cassell, 1990. ISBN 0-304-31812-4.

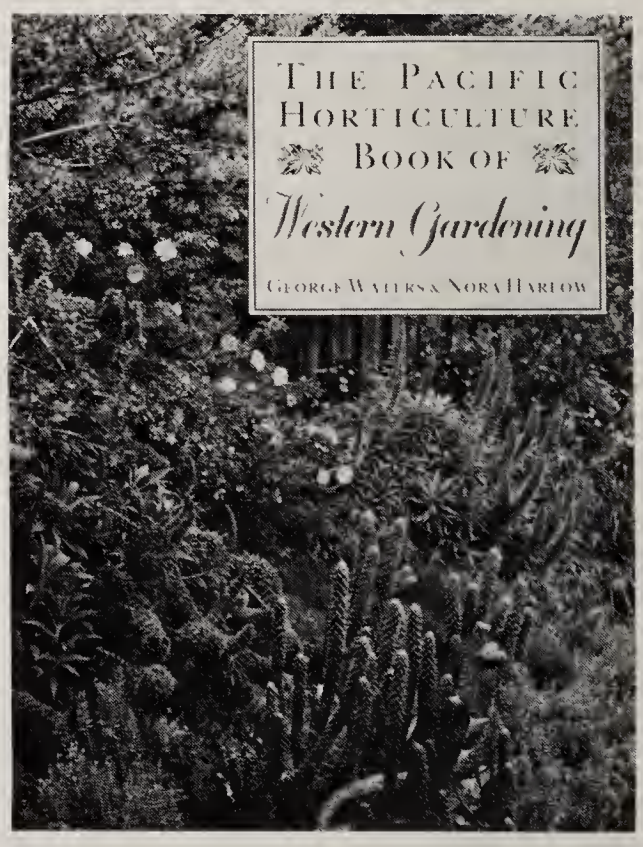
de Klemm, Cyrille. **Wild Plant Conservation and the Law**. The World Conservation Union Environmental Policy and Law Paper #24. Bonn, Germany: IUCN and the World Wildlife Fund, 1990. ISBN 2-8317-0001-9.

Eastman, Donald C. **Rare and Endangered Plants of Oregon**. Wilsonville, OR: Beautiful America Publishing Co., 1990. ISBN 0-89802-561-3.

Oakley, Myrna. **Public and Private Gardens of the Northwest**. Wilsonville, OR: Beautiful America Publishing Co., 1990. ISBN 0-89802-549-4.

Taylor, Ronald J. **Northwest Weeds**. Missoula, MT: Mountain Press Publishing Co., 1990. ISBN 0-87842-260-9.

Waters, George, and Nora Harlow. **The Pacific Horticulture Book of Western Gardening**. Boston: David R. Godine, 1990. ISBN 0-87923-763-5.



Wyman, Donald. **Trees for American Gardens**. 3rd ed. New York: MacMillan, 1990. ISBN 0-02-632201-3.

All of these books can be found in the Elisabeth C. Miller Library, Center for Urban Horticulture, University of Washington. Library hours: Monday, 9 a.m. to 8 p.m. (to 5 p.m. after June 10, 1991); Tuesday through Friday, 9 a.m. to 5 p.m.

For Further Information

by Valerie Easton

Birds, Bees, Bats, and Butterflies

Unbeknownst and underappreciated by me, I grew up in a one-acre gardener's paradise that was a fully functioning miniature ecosystem. Fat salmon spawned in the creek running through our yard (not called a ''garden'' then). We caught tadpoles, frogs, and water-skippers, ran from seemingly giant dragonflies, and endlessly chased after lizards and snakes. The beasts and bugs in our yards were the major childhood preoccupation of all the kids in the neighborhood, topped off by illicitly letting our baby alligator loose in the creek and occasionally allowing our pet raccoon to chase the rodents under the pigeon loft. I only realize what has been lost today when I look through the books described below, which in small part are dedicated to creating what we so took for granted not *all* that many years ago.

> What point is there in bat boxes for bats to roost in, if there are not enough insects for the bats to live on to survive? What butterflies will there be to come to a *Buddleia* bush if those butterflies cannot find the right plants to lay their eggs on? The more we discover about the natural world, the more complex it proves to be, and the most logical response to this is to manage or recreate habitats that we know to be successful in providing homes for a wide variety of plants and animals.

So reads part of the introduction from the most beautiful of the following books, *Creating a Wildlife Garden* by Bob and Liz Gibbons (London: Hamlyn, 1988. ISBN 0-600-33384-1). It focuses on design and creation of small-scale densely planted habitat gardens. Design concepts, technical aspects, aesthetics, and plant material are all considered as part of an overall strategy to attract wildlife to the garden. Possibilities abound in the numerous color photos—hummingbirds, mint beetles, grass snakes, and holly blue butterflies, as well as a soft huddle of brown long-eared bats, entice the gardener; so do the garden examples themselves. The authors' emphasis on design and animal-attracting plants makes this book especially useful.

The best of the books on this subject impresses upon the reader that wildlife gardening ends up being of as much benefit to the gardener as to the creatures. Changes of season are emphasized by visiting birds—curiosity aroused by unusual and beautiful insects. Connections are made with the natural world through the winged, furry, and crawling visitors and residents. *The Wildlife Gardener* by John V. Dennis (New York: Knopf, 1985. ISBN 0-394-53582-0) is a handbook both for creating a wildlife garden and enjoying all the pleasures of observing it. The diversity needed in a small garden to attract a variety of creatures and to create a functioning ecosystem—and all the reasons for doing so—are fully discussed. A lengthy appendix helps with unfamiliar animals, plants, and insects.

A book that covers the same ground, but emphasizes seasonal plantings to attract birds, is *Attracting Backyard Wildlife: A Guide for Nature Lovers*, by Bill Merilees (Stillwater, MN: Voyageur Press, 1989. ISBN 0-89658-130-6). A more active approach than just providing an appropriate environment is advocated; this is achieved through recipes for butterfly or moth ''bait'' (includes beer and rum, honey, bread, etc.), and suggestions on having nesting materials available and ready—such as hanging an onion bag filled with bullrush down in a likely nesting spot and keeping moist mud available. Perhaps more useful is the chapter on how to care for sick and injured animals entitled ''Backyard First Aid,'' and an appendix of helpful agencies.

There are several very good books on attracting specific types of wildlife: *The Butterfly Garden* by Mathew Tekulsky (Boston: Harvard Common Press, 1985. ISBN 0-916782-70-0) is a thorough guide to attracting this most beautiful of insects. Although, according to the introduction, the Northwest is one of the poorest parts of the country for butterflies in both number and diversity, this book's detailed instructions are encouraging—we just need more warm sunshine! And if motivation is needed, pick up *The Country Diary Book of Creating a Butterfly Garden* by E.J.M. Warren (New York: Henry Holt & Co., 1988. ISBN 0-8050-0814-4). The graceful colored illustrations of insects and plants on nearly every page, and the beautiful photographs, make it look worthwhile to attract moths to the garden, not to mention the gorgeous blue-winged Adonis blue butterfly. A list of ''golden rules for butterfly gardening'' makes it clear that gardening for wildlife often means simply using responsible

and thoughtful gardening practices.

Songbirds have long been the most prized and sought after garden visitors. *The Audubon Society Guide to Attracting Birds* by Stephen Kress (New York: Charles Scribner's Sons, 1985. ISBN 0-684-18362-5) and *Garden Birds: How to Attract Garden Birds to Your Garden* by Dr. Noble Proctor (Emmaus, PA: Rodale Press, 1985. 0-87857-592-8) are two good books on this subject. *The Audubon Society Guide* has garden plans, hints from knowledgeable birders, and extensive information on plants and feeding. Many ideas are included (none guaranteed) to keep squirrels out of bird feeders, including the "ultimate squirrel trap." Proctor's book has a regional emphasis, with thorough information and beautiful illustrations arranged by type of bird. This is the book to use if you are interested in finding out the possibility of attracting the gray catbird to your garden (yes—it summers in Western Washington) or which plantings might attract the red-eyed vireo (tall trees with significant undergrowth).

Going beyond books, two excellent newsletters with the identical title are available: *Urban Wildlife News*. One is a British publication, issued monthly. It is available without charge from the Nature Conservancy Council, Northminster House, Peterborough, UK PE1 1UA. The domestic title is a benefit of membership in the National Institute for Urban Wildlife, 10921 Trotting Ridge Way, Columbia, MD 21044. Both have valuable current information, references, and reviews.

Closer to home is a habitat demonstration project in the Lakehills greenbelt area by the Bellevue Park Department and the Washington State Department of Wildlife (WDW). This is the place to visit for inspiration and practical know-how. An area the size of a typical yard, adjoining a 130-acre greenbelt, has been created to attract wildlife with plantings for butterflies, birds, and small mammals; a wildlife pond; and a woodland edge. A ranger is usually available and the interpretive center is located in the adjacent ranger station. The project is located at 15416 SE 16th, Bellevue, WA, or call the ranger station at (206) 451-7225. The WDW has information available on creating such a garden at home. Write to Steve Penland, Washington State Department of Wildlife, 16018 Mill Creek Boulevard, Mill Creek, WA 98012, for a revised packet on the backyard sanctuary program.

If you would like a more complete listing of books on this topic, including all of the titles discussed in this article, request the book list "Gardening with Wildlife" by writing the Elisabeth C. Miller Library, Center for Urban Horticulture, University of Washington (GF-15), Seattle, WA 98195; or call (206) 543-8616 (ask for the library).

When reading through the books described above, I was easily convinced of the desirability of wildlife gardening for both human and beast. That was no surprise, as it wouldn't be for anyone who spent childhood knee-deep in a creek catching water-skippers and longing to hear bats whir by on warm summer nights. What was surprising was the beauty of the gardens planned with wildlife in mind, the variety of possibilities for plants and design, and the number and quality of resources available to help the home gardener. Good gardeners create beauty and do themselves good at the same time. Wildlife gardening gives us a chance to go beyond this to enhance and preserve the larger ecosystem in a very tangible way.

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